

CLAIMS

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1. A server for hard copy apparatus control comprising:
means for connecting the apparatus to a network;
5 means for deciphering messages received via said means for connecting
based on data type and content;
means for routing deciphered messages received via said means for
deciphering such that specific tasks associated with hard copy apparatus control
are discriminatively routed; and
10 means for respectively receiving discriminatively routed messages and for
executing said tasks.
2. The invention as set forth in claim 1, the means for connecting the
apparatus to a network comprising:
15 an electronic mail handler component including means for automatically
sending electronic mail to subscribed clients based upon hard copy apparatus
status changes.
3. The invention as set forth in claim 1, the means for connecting the
20 apparatus to a network comprising:
a web server component having means for providing web-based clients
with an HTML interface application compatible therewith and having means for
thereafter communicating with each of said web-based clients via said HTML
interface application.

4. The invention as set forth in claim 3, the means for deciphering messages comprising:

means for generating requested HTML pages dynamically from provided
5 predetermined templates on-board and for processing web-based client input to said pages.

5. The invention as set forth in claim 4, comprising:

said HTML pages are interactive pages from the templates enabling the
10 clients to specify electronic mail server settings and to configure notification events.

6. The invention as set forth in claim 5, comprising:

the interactive pages enabling the clients to specify new configurations for
15 subcomponents of said means for deciphering messages.

7. The invention as set forth in claim 6, comprising:

said new configurations are submitted for processing to said means for
deciphering messages such that hard copy apparatus diagnostic subroutines
20 employed do actual reconfiguration of said hard copy apparatus.

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8. The invention as set forth in claim 4, the means for deciphering messages comprising:

means for filtering an in-coming client message based on header data content.

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9. The invention as set forth in claim 8, the means for routing deciphered messages comprising:

means for receiving filtered electronic mail messages and providing appropriate interaction with components of the server subsystem by examining the content described by an associated header of the message and acting on it.

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10. The invention as set forth in claim 2, the means for respectively receiving discriminatively routed messages and for executing said tasks associated with hard copy apparatus controls comprising:

15 interfaced with said hard copy apparatus, means for abstracting hard copy apparatus operational states;

interfaced with said hard copy apparatus, means for print job controlling;

interfaced with said means for abstracting, means for data storage managing; and

20 interfaced with said means for data storage managing, means for data storage.

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11. The invention as set forth in claim 10, comprising:

wherein the electronic mail handler component is invokable by the means
for data storage managing for automatically sending an electronic mail to
subscribed clients based upon hard copy apparatus operational state changes
5 abstracted in the means for abstracting.

12. The invention as set forth in claim 10, comprising:

the means for abstracting providing a status subserver component
including a portal with said hard copy apparatus for transmitting data representing
10 each operational state in a client-server model.

13. The invention as set forth in claim 12, the status subserver component
further comprising:

means for transposing hard copy apparatus device specific language into
15 a language for use by other server components.

14. The invention as set forth in claim 12, the status subserver component
further comprising:

a virtual multiplexer for permitting and managing data such that a plurality
20 of clients communicate substantially simultaneously with the hard copy
apparatus.

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15. The invention as set forth in claim 10, the means for data storage managing further comprising:

a COM executable server subcomponent for saving and retrieving electronic mail and hard copy apparatus operational state notification settings.

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16. The invention as set forth in claim 10, the means for data storage managing further comprising:

subcomponents for registering with the status subserver component for predetermined printer operational state change notification events.

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17. The invention as set forth in claim 16, further comprising:

when at least one of said events occurs, the status subserver provides a call back into the means for data storage managing which then takes appropriate action pursuant to client registration configurations by sending associated electronic mail to all subscriber clients registered for providing notification of said events.

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18. The invention as set forth in claim 4, said HTML interface application further comprising:

hyperlinks to a web site that leads to web pages that point to the means for generating requested HTML pages .

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19. The invention as set forth in claim 18, comprising:

means for generating requested HTML pages that loads an HTML file containing the predetermined template for the requested HTML page and merges it with current settings of diagnostics subsystem in the means for data storage,
 5 resulting in an HTML page containing current settings that is returned to a requesting client.

20. The invention as set forth in claim 19, comprising:

providing the requesting client with means for reviewing and modifying
 10 remote diagnostic settings to get specific hard copy apparatus operational state reports.

21. A hard copy apparatus, having printing mechanisms which have reportable operational state conditions, comprising:

15 an embedded server including computer code providing internet interface;
 associated with said computer code providing internet interface, computer code discriminating types of HTML data received via said computer code providing internet interface;

computer code handling incoming electronic mail and outgoing electronic
 20 mail;

associated with said computer code discriminating and said computer code handling incoming electronic mail and outgoing electronic mail, computer code routing data from said computer code discriminating types of HTML data

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and said computer code handling incoming electronic mail and outgoing electronic mail; and

associated with said computer code routing, computer code processing data routed by said computer code routing data such that the hard copy

- 5 apparatus printing mechanisms can be controlled and said reportable operational state conditions can be monitored via either said internet interface or said electronic mail.

22. The apparatus as set forth in claim 21 comprising:

- 10 the computer code providing internet interface is compatible with a dedicated HTML user interface residing on a remote browser outside a network firewall protecting access to said apparatus.

23. The apparatus as set forth in claim 22 comprising:

- 15 computer code generating requested interactive HTML pages dynamically from provided predetermined templates on-board said apparatus and for processing web-based client input from the interactive HTML pages.

24. The apparatus as set forth in claim 23 comprising:

- 20 said templates including computer code reporting apparatus current operational status.

25. The apparatus as set forth in claim 23 comprising:

said templates including computer code controlling apparatus functionality.

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26. The apparatus as set forth in claim 21 comprising:

computer code automatically generating and dispatching electronic mail messages indicative of the apparatus current operational states to a client
5 outside a network firewall protecting said apparatus.

27. The apparatus as set forth in claim 21 comprising:

said computer code routing data including computer code setting
apparatus configuration via predetermined electronic mail messages received.

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28. The apparatus as set forth in claim 21 comprising:

said computer code routing data including computer code performing
apparatus diagnostics via predetermined electronic mail received.

15 29. The apparatus as set forth in claim 21 comprising:

said computer code routing data including computer code performing
apparatus hard copy printing operation via predetermined electronic mail
received.

20 30. The apparatus as set forth in claim 21 comprising:

said computer code routing data including computer code responding to
device status queries via predetermined electronic mail received.

31. A method for operating a computer peripheral apparatus protected by a network firewall, comprising the steps of:

providing the apparatus with a server interface;

storing predetermined subsets of operational parameters of the apparatus

5 wherein each subset is related to a remote client having access to the server interface; and

upon a change of operational parameter state of said apparatus,

determining if the change is associated with any said subset and sending an

electronic message via said server interface to each client associated with said

10 subset wherein the message content includes notification of the change of operational parameter state.

32. The method as set forth in claim 31, in the step of providing the apparatus with a server interface, the server interface further comprising:

15 a web server application associated with an internet browser having a preconfigured user interface associated with the web server application wherein communicating through said firewall, is provided according to predetermined protocols shared by said web server application and said preconfigured user interface.

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33. The method as set forth in claim 32 comprising the step of:

operating functions of the computer peripheral apparatus via at least one of said protocols.

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34. The method as set forth in claim 31 comprising the step of:
operating functions of the computer peripheral apparatus via electronic
mail having a predetermined format accessible to subscribed clients.

5 35. The method as set forth in claim 32 comprising the step of:
operating diagnostic and maintenance functions on the computer
peripheral apparatus via at least one of said protocols.

10 36. The method as set forth in claim 31 comprising the step of:
operating diagnostic and maintenance functions of the computer
peripheral apparatus via electronic mail having a predetermined format
accessible to subscribed clients.

15 37. The method as set forth in claim 32 comprising the step of:
reporting current operational states of the computer peripheral apparatus
via said protocols.

20 38. The method as set forth in claim 31 the step of storing further comprising:
abstracting operational states of the computer peripheral apparatus in a
virtual multiplexer for permitting and managing data such that a plurality of clients
outside of said firewall can communicate substantially simultaneously with the
apparatus.

39. A process for communicating hard copy apparatus printing mechanisms reportable operational states over internet pathways wherein the apparatus is protected by a firewall, comprising the steps of:

coupling the apparatus to the internet pathways via a server having both
5 web server interface and electronic mail interface between the printing mechanisms;

communicating from a client to the server either via a web page provided by the server to the client having predetermined permissible data entry or via
10 predetermined permissible data entry is limited such that non-conforming data can not penetrate said firewall.

40. The process as set forth in claim 39, comprising the step of:

communicating data regarding said operational states from the server to
15 the client via said internet interface or said electronic mail interface, respectively, automatically in accordance with predetermined subset of said permissible data entry.

41. The process as set forth in claim 39, comprising the step of:

20 providing a portal having data representing each hard copy apparatus operational state in a client-server model.

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42. A hard copy apparatus server comprising:
- computer code configured to abstract operational state parameters of at least one hard copy apparatus associated with said server; and
 - computer code configured to communicate with said computer code
- 5 configured to abstract and said at least one hard copy apparatus via the internet using predetermined firewall penetrating protocols,
- wherein a plurality of clients outside of said firewall can communicate substantially simultaneously with the at least one apparatus.

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